What is claimed is:

1. A fiber optic sensing device for measuring a physical parameter comprising:
    - a polychromatic light source, generating light over a wide optical spectrum;
    - a fiber optic measuring probe including a Fabry-Perot sensing interferometer, modulating said polychromatic light by passing it through a Fabry-Perot cavity, having an optical path which is changed with said physical parameter;
    - an optical spectrometer means for determining the spectrum of said modulated light in wavelength domain, and fiber optic means for coupling said modulated light from said interferometer to said optical spectrometer;
    - a signal processing means for calculating a phase of said spectrum to determine the optical path of said Fabry-Perot cavity, and subsequent means for calculating the value of said physical parameter
2. A fiber optic sensing device according to claim 1, wherein:
    - said optical spectroscope means is a diffractive grating based spectrometer with a CCD photodetector array.
3. A fiber optic sensing device according to claim 1, wherein:
    - said optical spectroscope means is a diffractive grating based spectrometer with a CMOS photodetector array.
4. A fiber optic sensing device according to claim 1, wherein:
    - said optical spectroscope means is a spectroscope based on a variable attenuation filter.
5. A fiber optic sensing device according to claim 1, wherein:
    - said digital processing means includes memory for storing calibrated look-up-table data.
6. A fiber optic sensing device according to claim 1, wherein:
    - said phase is determined by performing a Fourier transform of said spectrum, digital filtering of said transformed signal by using a band-pass filter, performing an inverse Fourier transform of said filtered signal, determining the phase from said inverse Fourier transform, calculating the accumulated phase from said

phase, comparing said accumulated phase with a look-up-table data stored in said memory.

7. A fiber optic sensing device according to claim 1, further comprising:
   - a normalization probe which is attached to said fiber optic means instead of said fiber optic Fabry-Perot measuring probe for purpose of measuring the normalization spectrum;
   - said normalization probe has the same light attenuation as said fiber optic Fabry-Perot measuring probe.

8. A fiber optic sensing device according to claim 7, wherein:
   - said digital signal processing means records the spectrum from said normalization probe;
   - a measuring probe with a Fabry-Perot cavity is connected to said fiber optic means; said Fabry-Perot cavity is disposed into a measuring environment;
   - said digital processing means calculates the normalized spectrum by dividing the spectra from said fiber optic measuring probe and said normalization probe

9. A fiber optic sensing device according to claim 7, wherein:
   - said digital signal processing determines the phase of said normalized spectrum

10. A fiber optic sensing device according to claim 9, wherein:
    - said phase is determined by performing a Fourier transform of said normalized spectrum, digital filtering of said transformed signal by using a band-pass filter, performing and inverse Fourier transform of said filtered signal, determining the phase from said inverse Fourier transform, calculating an accumulated phase from said phase, comparing said accumulated phase with a look-up-table data stored in said memory.

11. A fiber optic sensing method for measuring a physical parameter, comprising steps of:
    - installing a fiber optic means coupling a polychromatic light source to a connector, which is outside of the measuring environment;
    - recording a normalization spectrum of said polychromatic light source by an optical spectrometer means with a digital signal processing means outside the measuring environment;

- recording a measuring spectrum of polychromatic light source by said optical spectrometer with a digital signal processing means inside the measuring environment;
- calculating a normalized optical spectrum;
- calculating a phase of said normalized optical spectrum;
- giving a value of a physical parameter by comparing said phase with a phase recorded under calibrated conditions.

12. A fiber optic sensing method for measuring a physical parameter according to claim 11, wherein said recording a normalization spectrum further comprising steps of:
    - attaching a normalization probe to said connector outside the measuring environment;
    - illuminating said normalization probe with said polychromatic light;
    - recording a normalization spectrum by said optical spectrometer means;
    - storing said normalization spectrum in a memory of said digital processing means.
13. A fiber optic sensing method for measuring a physical parameter according to claim 11, wherein said recording a measuring spectrum further comprising steps of:
    - replacing said normalization probe with a fiber optic Fabry-Perot measuring probe;
    - installing said fiber optic Fabry-Perot measuring probe into the measuring environment
    - illuminating said fiber optic Fabry-Perot measuring probe with said polychromatic light;
    - recording a measuring spectrum by said optical spectroscope means;
    - calculating a normalized spectrum by dividing said measuring spectrum by said normalization spectrum.
14. A fiber optic sensing method for measuring a physical parameter according to claim 12, wherein determining of said phase further comprising steps of:
    - performing a Fourier transform of said normalized spectrum;
    - digital filtering of said transformed signal by using a band-pass filter;

- performing an inverse Fourier transform of said filtered signal;
- determining a phase spectrum from said inverse Fourier transform;
- calculating an accumulated phase from said phase.

15. A fiber optic sensing method for measuring a physical parameter according to claim 14, wherein minimum and maximum frequencies of said band-pass filtering are chosen from maximum and minimum of interferometric fringe spacing occurred for minimum and maximum optical path differences